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A discussion of employment prospects for college graduates. Figures are given showing average earnings for graduates of selected groups of college (e.g., Ivy League, other famous eastern colleges, the Big Ten, and others), for persons with various levels of educational attainment, and for individuals in various occupations. The statement is made that, "It pays to go to college. It pays even more to study while at college."

In summary, the author states "the projected rise of college graduates in the next 10–20 years is likely to exceed substantially the openings in the professions and business generally expected by the college trained. This trend should be reflected in relative declines (but absolute gains) in the income of the college trained. They will also have to wait longer for the coveted openings in business and the professions. But their losses will be recouped to some extent by squeezing out the non-college-trained—and notably in management."

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The College Graduate, the Professions, and Management

8048

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(For THE MANAGEMENT REVIEW and SUPERVISORY MANAGEMENT)

These days the widely held view is that there are not enough college-trained men and women. In one sense there can never be too many. As a college teacher for almost forty years, the writer is aware of the non-pecuniary gains of education. The student learns to concentrate on a problem, how to organize and classify materials, how to select the important from the unimportant, how to generalize and check in the world of facts; and above all there is the joy of learning, of appreciating, of thinking rather than merely remembering, and finally of using one's imagination. These are some of the non-economic gains; but of course they cannot help but contribute also to the vocational advance of the student.

But in another sense we are not so certain about shortages. I mean in the market sense. Some ten years ago I wrote a book, The Market for College Graduates, in which I produced evidence to show that in the market sense the trend was towards too many college graduates. The evidence adduced was the history and projection of numbers of college graduates, the openings for these men and women commensurate with their expectations, and also the relative decline of pecuniary rewards for the college graduates. Their main outlets are, of course, the professions and business (proprietory and executive).

Now, egged on by many who want me to admit that I was wrong 10 years ago, I am rewriting that book. But the conclusions have not been seriously changed. Indeed outlets have been larger than anticipated. But the other evidence supports the results of the study of 1948.

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We are often excessively impressed by the widely held view of a shortage of engineers and scientists. But it is not clear to the economist that the shortage is real. If it were genuine, then why has the income of engineers over a recent period of 25 years risen only one-third as much as that of the average member of the labor market? Surely the thousands of employers are not monopolistic. Surely the engineers would move in response to offers of substantially higher pay. Indeed, there are shortages of able scientists and engineers. That the number of scientists and technical workers increased 5 and 4 times as much as all workers from 1870 to 1910 and 1910 to 1950, respectively, and engineers 6-7 times as much as all workers in the last 26 years suggests that the average scientist or engineer today is endowed with less ability than the engineer of 1870 or 1930. In other words, the growing demand for scientists results in the mobilization of men of declining native capacity for the sciences. As President Killian said, the real shortage now is in the flag officer group.

Nor do shortages of physicians and teachers point to the need of more college graduates. The fact is that restrictionism, not inadequacy of applicants, keeps down the supply of doctors; and difficulties of diverting adequate cash to education discourages entry into teaching.

The pressure of the flood of college graduates is evident in the following:

Living College Graduates

(In 1,000's)

1900 = 600

1950 = 6,000

1970 = 12,000-14,000 (estimated)

In the next 20 years the estimates are as follows (note the graduates tend to exceed potential openings):

(In 1,000's)

	Graduates Per Year	Net Additions, Professions and Management	Replacements, Professions and Management
1955-65	525	165	200
1965-75	750	150	250

This excess of demand over supply continues despite the rise of numbers in the professions and management, both absolutely and relatively.

Employment in the Major Occupations

	Number (Millions)				% Labor Market			
	1910	1955	1965	1975	1910	1955	1965	1975
All White Collar	7.9	23.8	30.5	36.6	22.3	38.7	41.6	44.0
Professional	1.6	5.7	7.8	10.0	4.6	9.2	10.6	12.0
Proprietor and Manager	2.6	6.0	7.3	8.3	7.3	9.8	9.9	10.0
Clerical and Sales	3.7	12.1	15.4	18.3	10.4	19.7	21.1	22.0

Source: Census Bureau and Department of Labor (B.L.S., November, 1956).

Openings in the proprietor and management class in the next 20 years seem relatively stabilized in relation to the working population; but professional openings will rise relatively as well as clerical and sales, the last a reservoir for many college graduates, spilling over in no small part as a result of inadequate vacancies elsewhere. Undoubtedly, mergers, rationalization, and the like tend to contain the trend of openings in management. Opportunities for the small proprietor are not what they used to be.

Evidence of pressures of numbers in the market for professional and businessmen is suggested by the fact that from 1939 to 1955 the rise of annual compensation was 242 per cent for all employments, 179 for the professions, 148 for managers, etc., and

240 for salesmen. Clearly, the professions and management were losing ground. The latter improved its position only 60 per cent as much as all employments. These are income figures before taxes. After taxes, of course, the results are even less satisfactory. In the 1940's, when the major steps towards more equal incomes were taken, the top 5 per cent of all families (after taxes) experienced a loss of real income (money income corrected for prices) of 2 per cent, whereas families in the lowest 20 per cent income group experienced a gain of 42 per cent.

These losses prevailed even though from 1940 on an unexpected rise of preferred openings occurred. In the 1940's and early 1950's, a marked change occurred in the economic situation which led to a much greater demand for college-trained people. The supply was short because of the thin generation of those of college age in the early fifties (low birth rates in the thirties), and the demands of military service. This was a reversal of earlier trends. Demand was unusual on account of the great changes in our economy. The 1950 Census showed remarkable gains for the numbers in the professions and business. For example, from 1940 to 1954, the rise for these groups was 4.4 millions against an increase of college graduates of 2.8 millions. In fact, the rise of jobs in these two occupations favored by college graduates was 50 per cent as compared with an increase of 30 per cent in all jobs. The increase of numbers at college but not graduating was of equal proportions to the increase of college graduates. The absorption of additional college graduates in these 14 years, equal to more than 50 per cent of all living college graduates in 1940, was remarkable -- in part explained by the "solution" of the unemployment problem and an unusual rise of demand in the professions and business. An outlet associated with the changeover of the economy from a depressed to an over-employed one will not be available in the future, nor is the upward trend in high-grade openings likely to continue at the rate of the forties. (In the business executive class, there was a decline in the years 1950 to 1954.) Surely a doubling in the proportion of college

trained in the next 20 years, coming after a rise of 1/3 in 14 years, is likely to depress the relative gains of the college graduates.

One other aspect of the recent situation should be noted. The apparent shortage of college graduates reflects the general shortage of manpower in an over-full-employment economy. Moreover, many of the shortages relate to special conditions -- e.g., the poor training in mathematics and lack of special talents which account for shortages in engineering in a period of unusual demand; the poor pay for teachers which discourages entry; the lack of accommodations in medical schools.

* * * * * *

How serious are these market trends for the college graduate of today and tomorrow? No disaster is implied, especially if he (she) takes into account the prospects. The losses are relative. Since average per capita income should double in dollars of stable purchasing power in the next 25 years, the college graduate might expect a rise less than 100 per cent -- substantially less, possibly only 50 per cent. But this gain is not to be sneezed at.

* * * * * *

College graduates, confronted with increased compensation, can improve their position by squeezing out the non-college graduates. In many professions -- e.g., school teaching (63 per cent college graduates), nursing (26 per cent), engineering (57 per cent) -- there is still considerable room for squeezing out the non-college graduate. But if the baccalaureate degree increasingly becomes a ticket of admission to a profession, the rush to the colleges may accelerate.

In management, also, there is much evidence of the increased requirements for higher education. This is evident not only in the fashionable practice of scouting for college seniors. In 1928, Taussig and Joselyn (American Business Leaders) studied our business leaders. They found that 32 per cent were college graduates. In the recent study by Warner and Abegglen (Occupational Mobility in American Business and Industry, 1955),

the authors found that their sample of 8,000 business elite averaged 57 per cent college graduates, a clear indication of rising educational achievement for business leaders.

The Warner group is, however, an elite group. According to the United States Census, there were 4,708,000 managers, officers, and proprietors except farm. Of this number, only 535,000, or 11.4 per cent, had completed a college education. The ratio of college graduates in the professional group was 51.7 per cent. Hence, it may be concluded that the managers, etc. class is wide open for college graduates.

Another interesting aspect of these statistics is that the median income in the professional area in 1954 was $3,874, and in the managers, etc. category, $4,908. Yet the median years of schooling were 16.1 and 12.2 years, respectively. Per year of schooling, the respective incomes were $250 for professors and $405 for businessmen.

These results are rather inconsistent with the general thesis of this paper of a high correlation between education and income. How can we explain them?

An obvious answer is to say that the professional by definition stresses income less than the businessman. But this does not explain the market phenomena.

A relevant consideration is the contribution of women. They are especially important in the professions -- and notably in teaching and nursing. In 1950, 12.2 per cent of women were in the professions and only 7.5 per cent of the men. Women account for close to half the workers in the professions; though they are a much smaller proportion of all workers. Since they tend to concentrate in the low-paying professions, they tend to depress pay in the professions. Of all professional women, 96 per cent are in low-paying professions. These account for 40 per cent of total professional jobs for both sexes and 63 per cent of all women in the professions. In the managers, official, etc. class, women in 1954 accounted only for 10 per cent of the total.

Clearly, the large contribution of numbers by women in the professions and the small one in industry help explain the differential income between the professions

and business. This is so because women tend to receive lower incomes than men; and hence in occupations where women are relatively numerous, incomes tend to be depressed.

An interesting question is why do the women crowd the low-paying occupations. In teaching and nursing, they have special qualifications; and these are services which seem unable to attract adequate financial resources. There are also professions, and notably nursing, which, on the average, enlist few college graduates. But educational differentials are not the whole story. The New York Times revealed that graduates of 7 top women's colleges who had been working for 15 years were earning $3,790 per year. The income of their husbands, 83 per cent college graduates, was $9,800.

In the professions in the early fifties, the average woman earned $3,008, and the average man, $4,905; in the managers, etc. class the respective figures were $2,548 and $5,234 -- suggesting women succeed even less in business than in the professions both absolutely and relatively.

In recent years, women seem to be making more headway in the management, executive occupations than in the professions. At least from 1940 to 1950, their participation in these occupations increased relatively to that in the professions. But their income rose much more in the professions than in the managerial occupations from 1939 to 1954, and average pay in 1954 was $3,008 in the professional occupations as compared with $2,548 (1953) in the managerial occupations.

Women play a larger part in the managerial occupations than they did in the early years of the century. In 1940, there were 27,000 women reported as proprietors, managers and officials, or a rise of more than 100 times since 1870. They accounted for 10 times as large a percentage of the total as in 1870. In a broader classification, women accounted for almost 1 million of 6,050,000 in the managers, officials and proprietors group by 1954, a rise of about 125 per cent from 1940 to 1954. Their share in such occupations as insurance and banking continued to increase.

But when the occupations of women in higher-level managerial positions are scrutinized, it is found that on the whole they tend to hold relatively unimportant positions and on the whole they participate in the managerial posts much less relatively than men. Thus, in a survey in three areas of employees in department stores, insurance, banking and manufacturing for the years 1948-49, it was found that women's sharing of high-level positions relative to their share of all employees was three-quarters in department stores and roughly one-third in the other three categories. Their share of officers was but 4, 2, 1, and 4 per cent, respectively.

All kinds of explanations are offered concerning the rather unsatisfactory record of women: attitudes and prejudices of both men and women, inclusive of preference of women for male supervisors; lower productivity of women; physical inability of women to cope with some positions; lack of ambition; uncertainty of continuance in job; inadequate training and opportunities for training and know-how; lack of preparation for high-paying positions attainable in later years. (Oddly enough, women seem to emphasize vocational aspects of education more than men.)

* * * * * *

College graduates, unable to find expected openings, tend, of course, to crowd the professions and management; and hence rewards decline. But there is another way out. The reduced status is reflected in longer waiting periods for the desired openings. The college graduate becomes a clerk, a technician, a salesman, or continues his (her) education and then rises later.

In this connection, a study by the Department of Labor of identical people in 1930 and 1950 was revealing. Whereas, in 1930, 2.9 per cent of this sample were in the professions, 20 years later the proportion in the professions had risen to 6.8 per cent; for managers, officials, etc., the respective figures were 2.5 and 11 per cent.

* * * * * *

All of this might suggest to the reader that a college education does not pay. Far from it. All that we have contended so far is that the <u>relative</u> position of the

college graduate tends to deteriorate. But the association of education and income still remains high.

Basing themselves on the 1950 Census of Education, two experts from the Census Bureau estimated incomes at age 45-54 as follows. (These figures overstate gains of education to some extent, since the college educated tend especially to have higher incomes relatively at/advanced age.)

The worker with no education	$1,588 per year
The worker with an elementary school education	3,112 " "
The worker with a high school education	4,519 " "
The worker with 4 or more years at college (the average is 4½)	7,907 " "

By going to college and investing net about $9,000, inclusive of income foregone, the student on the average will obtain $3,400 per year more than if he stopped his education at the end of his high school career. The $9,000 yields a return over the lifetime of more than $135,000. In fact, on the basis of the anticipated income of the college graduate of 1958, the extra reward may be twice that figure -- reduced to some extent as the increased supply of graduates depresses rewards. Physicians may look forward to lifetime incomes of a million dollars; dentists, $600,000; and lawyers, about $750,000.

By multiplying the annual average income by the number of years of work, it is possible to estimate lifetime earnings at different levels of education (on the basis of 1949 earnings):

	Lifetime Earnings
No formal education	$58,000
8 years	116,000
Average, all workers	133,000
12 years	165,000
16½ years	268,000

The college diploma is worth $135,000 in a lifetime as compared to the return for the average worker. (Twice as much corrected, as suggested above, for the current crop of graduates.) Even this is an underestimate, for college graduates are

younger than the whole working population, for so many of them are recent graduates. At comparable ages the college graduate's advantage is even greater. Since only 6 per cent of the adult population consists of college graduates, the high rewards to the college trained are associated in part with their small numbers.

In one category there is evidence that education does not pay in dollars. That is for those with higher degrees. Thus, despite 3-4 years of additional study required for a doctorate, men of science with a Ph.D. receive an average income of $5,720; but those with a bachelor's or no degree receive $6,450. This striking paradox, which is also to be found in other areas, is explained in part by the nature of the work of the A.B. against that of the Ph.D., the former tending to be in the managerial class, the latter in the technical field and frequently in teaching where incomes relative to additional preparation can thus explain to some extent the great shortages of Ph.D.'s. Thus, despite the shortage, only 3.1 per cent of the men with AGCT (intelligence) score of 130 or higher receive a Ph.D., although a score of 130 is considered adequate.

Frequently it is said that the student who receives the Gentlemen C is more successful in later life than the honors student. One study of material returns does not support this position. In a sample of over 200 students considered by the writer as chairman of a large department at Harvard, he found a high association of income and grades. This sample consisted of the top 6 per cent of undergraduates (high magnas and summas) concentrating in economics at Harvard in the last 30 years. The income of these graduates, when adjusted for age, was found to be $15,000. This compares with an average income (in each instance of males) of $3,300; of those in the professions of $4,905; of business managers, executives and proprietors of $5,234; and of college graduates (all, not those at the peak of their earning power as given earlier) of $5,000. (All figures were adjusted to 1954 income levels.)

It pays to go to college. It pays even more to study while at college.

Earnings, both annual and lifetime, seem to vary with the college chosen. For example, here are estimates made in a study, They Went to College, for 1947. (The sample here is much smaller than the Census study quoted earlier, and hence more subject to greater errors.)

Lifetime Income (In $000's)

Harvard-Yale-Princeton	295
Ivy Colleges (Other)	246
17 Technical Colleges	215
20 Famous Eastern Colleges	212
The Big Ten (Middle West)	207
All Other Midwest	173
All Other Eastern	169
Average	215

The Harvard-Yale-Princeton graduate receives a lifetime earning of about $80,000 in excess of the average and $125,000 in excess of "all other Eastern."

It should be clear that these differential gains for all college trained and for graduates of particular colleges are reflected in income that accrues in the years after graduation. They are not incomes available as soon as one graduates.

Moreover, one should deduct the costs of the education. Messrs. Glick and Miller, of the Census Bureau, have estimated that the net cost of a college education, inclusive of income foregone, is $8,900; and in addition we should add $15,000 interest on a safe investment on the $8,900 to age 72 -- or $24,000 in all. Hence, against these gains should be deducted $24,000. (This assumes that the money would have been invested. Actually most of it would have been spent.)

Annual Incomes in the Early Fifties

Physicians	$12,518 (1951)
Lawyers	9,375 (1951)
Engineers (35 and over)	8,100 (1949-50)
Dentists	7,743 (1951)
Professors in Large State Universities	7,000 (1953)
Managers, Officials & Proprietors, Male (Except Farm)	5,234 (1954)
Professional, Male	4,905 (1954)
Instructional Staff in Public Schools	3,725 (1953-54)

Choice of occupation makes a great difference. The physician, for example, in 1955 can expect a lifetime income about 3½ times that of the school teacher and more than 2½ times the average professional male. In part, but only in part, the explanation of this difference is undoubtedly the obstacles to entry in the medical profession and the prospect of a rather long training period.

Managers, officials and proprietors, with an average income of $5,234, do not do as well as the members of the leading professions. But this is a broad category. The Editors of Fortune (The Executive Life), covering 900 top executives, found a median income of $70,000; a median for chief executive officers of $100,000; with the highest median ($100,000) for machinery and equipment, retail sales, and steel; and the lowest ($40,000) for the railroads.

One reason for high income of college trained is that a college diploma is a ticket to all kinds of jobs -- in the professions and in business. This is increasingly so. As more and more occupations (e.g., technical, nursing, elementary school teaching) require a college degree, the outpouring of college graduates will be matched by higher demand and tend to weaken the forces making for relative economic deterioration.

Another explanation of the high incomes is that the college trained are more intelligent than the non-college trained.

Thus, in the Army General Classification Text (AGCT), 90 per cent of the college graduates were in the upper half in intelligence ranking. At the high level of 121 (100 = average) college graduates were relatively 3 1/3 times as numerous as non-college graduates. At 140, they were 6 times as numerous (12 and 2 per cent).

Again, the AGCT scores reveal:

Total Population	100
Those Who Enter High School	105
Those Who Graduate from High School	110
Those Who Enter College	115
Those Who Graduate College	121

The college graduate is on the average more intelligent even if it is allowed that of the top 40 per cent of high school graduating classes, only 35 per cent ever graduate college. This is so because the two-thirds of the bright students who never graduate college are a much smaller part of the 94 per cent of the adult population not college graduates than the one-third who graduate are in the 6 per cent of the adult population who are college graduates.

We must not, however, explain high incomes merely by the contributions of a college education, or the innate ability of those who go to college. It is also important to allow for the higher incomes of families sending children to college. Some have special advantages.

Thus, one study showed that all the graduates of a city high school coming from families with incomes (at present-day levels) of $15,000 went to college; but only 44 per cent of those with incomes of 1/3 this amount, and 25 per cent of those with incomes of 1/7 this amount entered college. In one prominent girls' college, the parents from professional and business or business executive background were 6 times as numerous relatively as in the general population. Again, the six wealthiest states revealed twice as large an enrollment in college relative to population as the six poorest states. In a New York State study, it was found that in the top quarter in the graduating class in high school, 41 per cent of those whose parents made no tax return attended college, whereas 76 per cent of the children in this group with parents reporting income of $9,000 or over went to college.

In their study of business leaders, Messrs. Warner and Abegglen showed that the members of an 8,000 business elite graduated college 8 times as often relatively as the general population. But they also showed that the higher the occupation of the parent the more likely the son in this elite group would graduate college. Twice as many members with parents in the professions had a college education as those with fathers who were laborers; and 1½ times as many had a college

education who had fathers with a college education as those with fathers with less than a college education.

* * * * * *

In summary, the projected rise of college graduates in the next 10-20 years is likely to exceed substantially the openings in the professions and business generally expected by the college trained. This trend should be reflected in relative declines (but absolute gains) in the income of the college trained. They will also have to wait longer for the coveted openings in business and the professions. But their losses will be recouped to some extent by squeezing out the non-college trained -- and notably in management.

Income differentials by occupations reflect the supply and demand trends. Where women are found in large numbers, incomes tend to be lower than they otherwise would be -- in part because of prejudices of both men and women. But the position of women both in the professions and management is improving.

Variations of lifetime income are closely associated with educational achievement. Despite the trends, the highly educated are still a small minority of our working population. But native ability, connections, and the like still are relevant in explaining income differentials.